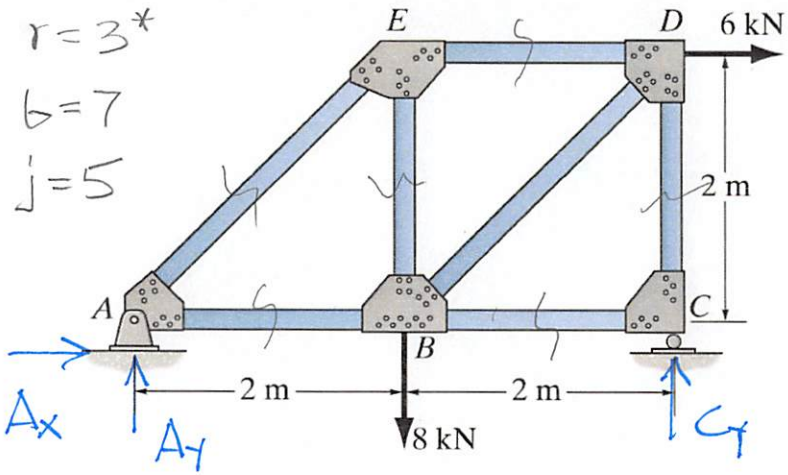
Example 3b-4. Determine all the forces in the following truss.



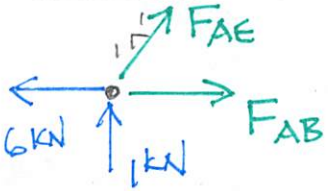
$$\circlearrowleft + \sum M_A = 0 = -8\,kN(2m) - 6kN(2m) + C_y(4m)$$

$$C_y = 7kN$$

$$+\uparrow \sum F_y = 0 = A_y + C_y - 8\,kN \qquad A_y = 1\,kN$$

$$\overset{+}{\rightarrow} \sum F_x = 0 = A_x + 6kN \qquad A_x = -6kN$$

JOINT A



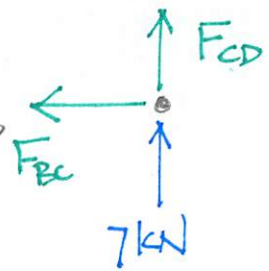
$$+\uparrow \sum F_y = 0 = \frac{1}{\sqrt{2}} F_{AE} + 1\,kN$$

$$F_{AE} = -1.41\,kN$$

$$\overset{+}{\rightarrow} \sum F_x = 0 = F_{AB} + \frac{1}{\sqrt{2}} F_{AE} - 6$$

$$F_{AB} = 7kN$$

JOINT C

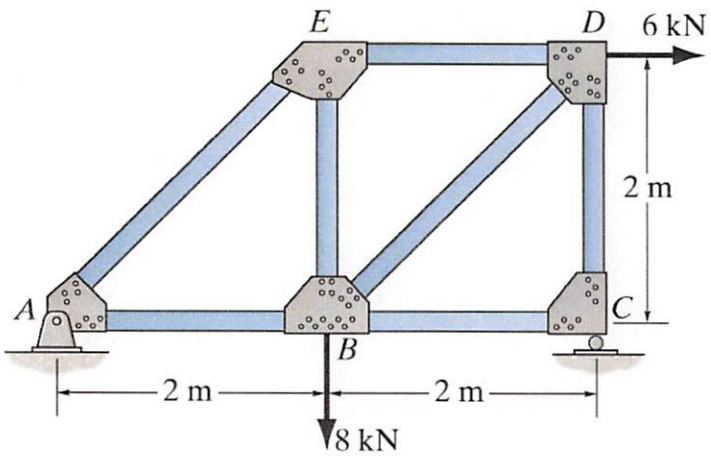


$$\overset{+}{\rightarrow} \sum F_x = 0 = -F_{BC}$$

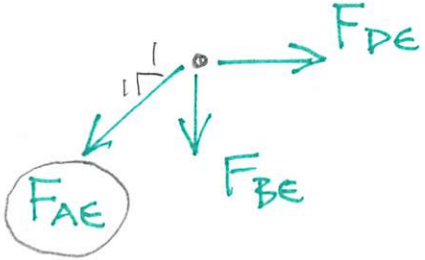
$$+\uparrow \sum F_y = 0 = F_{CD} + 7kN$$

$$F_{CD} = -7kN$$

Example 3b-4. Determine all the forces in the following truss.



JOINT E



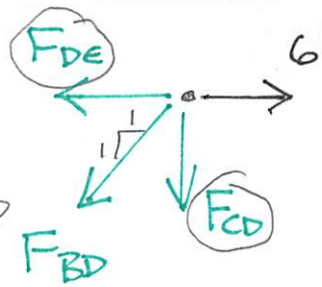
$$+\uparrow \sum F_y = 0 = -F_{BC} - \frac{1}{\sqrt{2}} F_{AE}$$

$$F_{BC} = 1\,\text{kN}$$

$$\stackrel{+}{\rightarrow} \sum F_x = 0 = F_{DE} - \frac{1}{\sqrt{2}} F_{AE}$$

$$F_{DE} = -1\,\text{kN}$$

JOINT D



$$+\uparrow \sum F_y = 0$$

$$= -F_{CD} - \frac{1}{\sqrt{2}} F_{BD}$$

$$F_{BD} = 9.9\,\text{kN}$$